



# SEQUENCE LISTING

<110> EXELIXIS, INC.

<120> INSECT P53 TUMOR SUPPRESSOR GENES AND PROTEINS

<130> EX00015C FIRST AMENDMENT

<140> US 09/524,101

<141> 2000-03-13

<150> US 09/268,969

<151> 1999-03-16

<150> US 60/184,373

<151> 2000-02-23

<160> 35

<170> PatentIn version 3.2

<210> 1

<211> 1573

<212> DNA

<213> Drosophila melanogaster

<400> 1

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<211> 385
<212>  PRT
<213>  Drosophila melanogaster

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<400>  2

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Glu Asp Asp Ser Thr Glu Val Asp Ile Lys Glu Asp Ile Pro Lys Thr
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Val Glu Val Ser Gly Ser Glu Leu Thr Thr Glu Pro Met Ala Phe Leu
          35           40           45

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Gln Gly Leu Asn Ser Gly Asn Leu Met Gln Phe Ser Gln Gln Ser Val
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Leu Arg Glu Met Met Leu Gln Asp Ile Gln Ile Gln Ala Asn Thr Leu
65           70           75           80

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Pro Lys Leu Glu Asn His Asn Ile Gly Gly Tyr Cys Phe Ser Met Val
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Leu Asp Glu Pro Pro Lys Ser Leu Trp Met Tyr Ser Ile Pro Leu Asn

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Cys Pro Asn Lys Glu Trp Leu Leu Gln Ser Ile Glu Gly Met Ile Lys  
340 345 350

Glu Ala Ala Ala Glu Val Leu Arg Asn Pro Asn Gln Glu Asn Leu Arg  
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Arg His Ala Asn Lys Leu Leu Ser Leu Lys Lys Arg Ala Tyr Glu Leu  
370 375 380

Pro  
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<212> DNA  
<213> Leptinotarsa decemlineata

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gaaggggaca atatggataa tctaaacttt ttcaaggacg aaccaacttt gaatgattta 240  
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<211> 354  
 <212> PRT  
 <213> Leptinotarsa decemlineata

<400> 4

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Asp Glu Pro Thr Leu Asn Asp Leu Asn Tyr Ser Asn Ile Leu Asn Gly  
 35 40 45

Ser Ile Val Ala Asn Asp Asp Ser Lys Met Val His Leu Ile Phe Pro  
 50 55 60

Gly Val Gln Thr Ser Val Pro Ser Asn Asp Glu Tyr Asp Gly Pro Tyr  
 65 70 75 80

Glu Phe Glu Val Asp Val His Pro Thr Val Ala Lys Asn Ser Trp Val  
 85 90 95

Tyr Ser Thr Thr Leu Asn Lys Val Tyr Met Thr Met Gly Ser Pro Phe  
 100 105 110

Pro Val Asp Phe Arg Val Ser His Arg Pro Pro Asn Pro Leu Phe Ile  
 115 120 125

Arg Ser Thr Pro Val Tyr Ser Ala Pro Gln Phe Ala Gln Glu Cys Val  
 130 135 140

Tyr Arg Cys Leu Asn His Glu Phe Ser His Lys Glu Ser Asp Gly Asp  
 145 150 155 160

Leu Lys Glu His Ile Arg Pro His Ile Ile Arg Cys Ala Asn Gln Tyr  
 165 170 175

Ala Ala Tyr Leu Gly Asp Lys Ser Lys Asn Glu Arg Leu Ser Val Val  
 180 185 190

Ile Pro Phe Gly Ile Pro Gln Thr Gly Thr Glu Ser Val Arg Glu Ile  
 195 200 205

Phe Glu Phe Val Cys Lys Asn Ser Cys Pro Ser Pro Gly Met Asn Arg  
 210 215 220

Arg Ala Val Glu Ile Ile Phe Thr Leu Glu Asp Asn Gln Gly Thr Ile  
 225 230 235 240

Tyr Gly Arg Lys Thr Leu Asn Val Arg Ile Cys Ser Cys Pro Lys Arg  
 245 250 255

Asp Lys Glu Lys Asp Glu Lys Asp Asn Thr Ala Asn Thr Asn Leu Pro  
 260 265 270

His Gly Lys Lys Arg Lys Met Glu Lys Pro Ser Lys Lys Pro Met Gln  
 275 280 285

Thr Gln Ala Glu Asn Asp Thr Lys Glu Phe Thr Leu Thr Ile Pro Leu  
 290 295 300

Val Gly Arg His Asn Glu Gln Asn Val Leu Lys Tyr Cys His Asp Leu  
 305 310 315 320

Met Ala Gly Glu Ile Leu Arg Asn Ile Gly Asn Gly Thr Glu Gly Pro  
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Tyr Lys Ile Ala Leu Asn Lys Ile Asn Thr Leu Ile Arg Glu Ser Ser  
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Glu Trp

<210> 5  
 <211> 1291  
 <212> DNA  
 <213> Tribolium castaneum

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 catcattcct gatgttgata aatttttgga agatcatgga ctcaaggacg atgtgggaag 180  
 aataatgcac gaaaacaacg tccatttagt aaatgacgac ggagaagaag aaaaatactc 240  
 taatgaagcc aattacactg aatcaatttt cccccccgac cagcccacaa acctaggcac 300

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<210> 6
<211> 350
<212> PRT
<213> Tribolium castaneum

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<400> 6

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Met Ser Gln Gln Ser Gln Phe Ser Asp Ile Ile Pro Asp Val Asp Lys
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Phe Leu Glu Asp His Gly Leu Lys Asp Asp Val Gly Arg Ile Met His
20          25          30

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Glu Asn Asn Val His Leu Val Asn Asp Asp Gly Glu Glu Glu Lys Tyr
35          40          45

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Ser Asn Glu Ala Asn Tyr Thr Glu Ser Ile Phe Pro Pro Asp Gln Pro
50          55          60

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Thr Asn Leu Gly Thr Glu Glu Tyr Pro Gly Pro Phe Asn Phe Ser Val  
65 70 75 80

Leu Ile Ser Pro Asn Glu Gln Lys Ser Pro Trp Glu Tyr Ser Glu Lys  
85 90 95

Leu Asn Lys Ile Phe Ile Gly Ile Asn Val Lys Phe Pro Val Ala Phe  
100 105 110

Ser Val Gln Asn Arg Pro Gln Asn Leu Pro Leu Tyr Ile Arg Ala Thr  
115 120 125

Pro Val Phe Ser Gln Thr Gln His Phe Gln Asp Leu Val His Arg Cys  
130 135 140

Val Gly His Arg His Pro Gln Asp Gln Ser Asn Lys Gly Val Ala Pro  
145 150 155 160

His Ile Phe Gln His Ile Ile Arg Cys Thr Asn Asp Asn Ala Leu Tyr  
165 170 175

Phe Gly Asp Lys Asn Thr Gly Thr Arg Leu Asn Ile Val Leu Pro Leu  
180 185 190

Ala His Pro Gln Val Gly Glu Asp Val Val Lys Glu Phe Phe Gln Phe  
195 200 205

Val Cys Lys Asn Ser Cys Pro Leu Gly Met Asn Arg Arg Pro Ile Asp  
210 215 220

Val Val Phe Thr Leu Glu Asp Asn Lys Gly Glu Val Phe Gly Arg Arg  
225 230 235 240

Leu Val Gly Val Arg Val Cys Ser Cys Pro Lys Arg Asp Lys Asp Lys  
245 250 255

Glu Glu Lys Asp Met Glu Ser Ala Val Pro Pro Arg Arg Lys Lys Arg  
260 265 270

Lys Leu Gly Asn Asp Glu Arg Arg Val Val Pro Gln Gly Ser Ser Asp  
275 280 285

Asn Lys Ile Phe Ala Leu Asn Ile His Ile Pro Gly Lys Lys Asn Tyr  
 290 295 300

Leu Gln Ala Leu Lys Met Cys Gln Asp Met Leu Ala Asn Glu Ile Leu  
 305 310 315 320

Lys Lys Gln Glu Gln Gly Gly Asp Asp Ser Ala Asp Lys Asn Cys Tyr  
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Asn Glu Ile Thr Val Leu Leu Asn Gly Thr Ala Ala Phe Asp  
 340 345 350

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 <211> 508  
 <212> DNA  
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 <211> 169  
 <212> PRT  
 <213> Tribolium castaneum

<400> 8

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Ile Cys Ser Ile Phe Gln Leu Glu Asp Phe Lys Phe Asn Ile Asn Gln  
 20 25 30

Ser Ser Tyr Leu Ser Ala Pro Ile Phe Pro Pro Ser Glu Pro Leu Glu

35	40	45
Leu Cys Asn Thr Glu Tyr Pro Gly Pro Leu Asn Phe Glu Val Phe Val		
50	55	60
Asp Pro Asn Val Leu Lys Asn Pro Trp Glu Tyr Ser Pro Ile Leu Asn		
65	70	75 80
Lys Ile Tyr Ile Asp Met Lys His Lys Phe Pro Ile Asn Phe Ser Val		
85	90	95
Lys Lys Ala Asp Pro Glu Arg Arg Leu Phe Val Arg Val Met Pro Met		
100	105	110
Phe Glu Glu Asp Arg Tyr Val Gln Glu Leu Val His Arg Cys Ile Cys		
115	120	125
His Glu Gln Leu Thr Asp Pro Thr Asn His Asn Val Ser Glu Met Val		
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Ala Gln His Ile Ile Arg Cys Asp Asn Asn Asn Ala Gln Tyr Phe Gly		
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Asp Lys Asn Ala Gly Lys Arg Leu Ser		
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 <211> 433  
 <212> DNA  
 <213> Heliothis virescens

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 <212> PRT  
 <213> *Heliothis virescens*

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Thr Gln Ala Glu Lys Arg Val Glu Arg Cys Val Gln His Phe His Glu  
 35 40 45

Ser Ser Thr Ser Gly Ile Gln Thr Glu Ile Ala Lys Asn Val Leu His  
 50 55 60

Ser Ser Arg Glu Ile Gly Thr Gln Gly Val Tyr Tyr Cys Gly Lys Val  
 65 70 75 80

Asp Met Ala Asp Ser Trp Tyr Ser Val Leu Val Glu Phe Met Arg Thr  
 85 90 95

Ser Ser Glu Ser Cys Ser His Ala Tyr Gln Phe Ser Cys Lys Asn Ser  
 100 105 110

Cys Ala Thr Gly Ile Asn Arg Arg Ala Ile Ala Ile Ile Phe Thr Leu  
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Glu Asp Ala Met Gly Asn Ile His Gly Arg Gln Lys Val Gly Ala Arg  
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26

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27425

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<212> DNA

<213> *Drosophila melanogaster*

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 <211> 433  
 <212> PRT  
 <213> Drosophila melanogaster

<400> 20

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Tyr Val Asp Asn Tyr Ile Asp Ser Val Glu Asn Leu Pro Asp Asp Val  
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Gln Arg Gln Leu Ser Arg Ile Arg Asp Ile Asp Val Gln Tyr Arg Gly  
 35 40 45

Leu Ile Arg Asp Val Asp His Tyr Tyr Asp Leu Tyr Leu Ser Leu Gln  
 50 55 60

Asn Ser Ala Asp Ala Gly Arg Arg Ser Arg Ser Ile Ser Arg Met His  
 65 70 75 80

Gln Ser Leu Ile Gln Ala Gln Glu Leu Gly Asp Glu Lys Met Gln Ile  
 85 90 95

Val Asn His Met Gln Glu Ile Ile Asp Gly Lys Leu Arg Gln Leu Asp  
 100 105 110

Thr Asp Gln Gln Asn Leu Asp Leu Lys Glu Asp Arg Asp Arg Tyr Ala  
 115 120 125

Leu Leu Asp Asp Gly Thr Pro Ser Lys Leu Gln Arg Leu Gln Ser Pro  
 130 135 140

Met	Arg	Glu	Gln	Gly	Asn	Gln	Ala	Gly	Thr	Gly	Asn	Gly	Gly	Leu	Asn	145	150	155	160
Gly	Asn	Gly	Leu	Leu	Ser	Ala	Lys	Asp	Leu	Tyr	Ala	Leu	Gly	Gly	Tyr	165	170	175	
Ala	Gly	Gly	Val	Val	Pro	Gly	Ser	Asn	Ala	Met	Thr	Ser	Gly	Asn	Gly	180	185	190	
Gly	Gly	Ser	Thr	Pro	Asn	Ser	Glu	Arg	Ser	Ser	His	Val	Ser	Asn	Gly	195	200	205	
Gly	Asn	Ser	Gly	Ser	Asn	Gly	Asn	Ala	Ser	Gly	Gly	Gly	Gly	Gly	Glu	210	215	220	
Leu	Gln	Arg	Thr	Gly	Ser	Lys	Arg	Ser	Arg	Arg	Arg	Asn	Glu	Ser	Val	225	230	235	240
Val	Asn	Asn	Gly	Ser	Ser	Leu	Glu	Met	Gly	Gly	Asn	Glu	Ser	Asn	Ser	245	250	255	
Ala	Asn	Glu	Ala	Ser	Gly	Ser	Gly	Gly	Gly	Ser	Gly	Glu	Arg	Lys	Ser	260	265	270	
Ser	Leu	Gly	Gly	Ala	Ser	Gly	Ala	Gly	Gln	Gly	Arg	Lys	Ala	Ser	Leu	275	280	285	
Gln	Ser	Ala	Ser	Gly	Ser	Leu	Ala	Ser	Gly	Ser	Ala	Ala	Thr	Ser	Ser	290	295	300	
Gly	Ala	Ala	Gly	Gly	Gly	Gly	Ala	Asn	Gly	Ala	Gly	Val	Val	Gly	Gly	305	310	315	320
Asn	Asn	Ser	Gly	Lys	Lys	Lys	Lys	Arg	Lys	Val	Arg	Gly	Ser	Gly	Ala	325	330	335	
Ser	Asn	Ala	Asn	Ala	Ser	Thr	Arg	Glu	Glu	Thr	Pro	Pro	Pro	Glu	Thr	340	345	350	
Ile	Asp	Pro	Asp	Glu	Pro	Thr	Tyr	Cys	Val	Cys	Asn	Gln	Ile	Ser	Phe	355	360	365	
Gly	Glu	Met	Ile	Leu	Cys	Asp	Asn	Asp	Leu	Cys	Pro	Ile	Glu	Trp	Phe				



370		375		380
His Phe Ser Cys Val Ser Leu Val Leu Lys Pro Lys Gly Lys Trp Phe				
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Cys Pro Asn Cys Arg Gly Glu Arg Pro Asn Val Met Lys Pro Lys Ala				
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Gln Phe Leu Lys Glu Leu Glu Arg Tyr Asn Lys Glu Lys Glu Glu Lys				
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<210> 21  
 <211> 2666  
 <212> DNA  
 <213> Drosophila melanogaster

<400> 21

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 <211> 556  
 <212> PRT  
 <213> Drosophila melanogaster

<400> 22

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Ile Arg Arg Glu Phe Ser Gly Val Pro Lys Asn Trp Asp Thr Glu Asp  
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Phe Asn Pro Ile Leu Leu Asn Lys Tyr Ser Val Leu Glu Ala Leu Gly  
 35 40 45

Glu Leu Ile Pro Glu Leu Pro Ala Lys Gly Val Val Gln Met Lys Asn  
 50 55 60

Ala Phe Phe His Lys Ala Leu Ile Met Leu Tyr Met Asp His Ser Leu  
 65 70 75 80

Val Gly Asp Asp Thr His Met Arg Glu Ile Ile Lys Glu Gly Met Leu  
 85 90 95

Asp Ile Asn Leu Glu Asn Leu Asn Arg Lys Tyr Thr Asn Gln Val Ala  
 100 105 110

Asp Ile Ser Glu Met Asp Glu Arg Val Leu Leu Ser Val Gln Gly Ala  
 115 120 125

Ile Glu Thr Lys Gly Asp Ser Pro Lys Ser Pro Gln Leu Ala Phe Gln  
 130 135 140

Thr Ser Ser Ser Pro Ser His Arg Lys Leu Ser Thr His Asp Leu Pro  
 145 150 155 160

Ala Ser Leu Pro Leu Ser Ile Ile Lys Ala Phe Pro Lys Lys Glu Asp  
 165 170 175

Ala Asp Lys Ile Val Asn Tyr Leu Asp Gln Thr Leu Glu Glu Met Asn  
 180 185 190

Arg Thr Phe Thr Met Ala Val Lys Asp Phe Leu Asp Ala Lys Leu Ser  
195 200 205

Gly Lys Arg Phe Arg Gln Ala Arg Gly Leu Tyr Tyr Lys Tyr Leu Gln  
210 215 220

Lys Ile Leu Gly Pro Glu Leu Val Gln Lys Pro Gln Leu Lys Ile Gly  
225 230 235 240

Gln Leu Met Lys Gln Arg Lys Leu Thr Ala Ala Leu Leu Ala Cys Cys  
245 250 255

Leu Glu Leu Ala Leu His Val His His Lys Leu Val Glu Gly Leu Arg  
260 265 270

Phe Pro Phe Val Leu His Cys Phe Ser Leu Asp Ala Tyr Asp Phe Gln  
275 280 285

Lys Ile Leu Glu Leu Val Val Arg Tyr Asp His Gly Phe Leu Gly Arg  
290 295 300

Glu Leu Ile Lys His Leu Asp Val Val Glu Glu Met Cys Leu Glu Ser  
305 310 315 320

Leu Ile Phe Arg Lys Ser Ser Gln Leu Trp Trp Glu Leu Asn Gln Arg  
325 330 335

Leu Pro Arg Tyr Lys Glu Val Asp Ala Glu Thr Glu Asp Lys Glu Asn  
340 345 350

Phe Ser Thr Gly Ser Ser Ile Cys Leu Arg Lys Phe Tyr Gly Leu Ala  
355 360 365

Asn Arg Arg Leu Leu Leu Leu Cys Lys Ser Leu Cys Leu Val Asp Ser  
370 375 380

Phe Pro Gln Ile Trp His Leu Ala Glu His Ser Phe Thr Leu Glu Ser  
385 390 395 400

Ser Arg Leu Leu Arg Asn Arg His Leu Asp Gln Leu Leu Leu Cys Ala  
405 410 415

Ile His Leu His Val Arg Leu Glu Lys Leu His Leu Thr Phe Ser Met

	420		425		430
Ile Ile Gln His Tyr Arg Arg Gln Pro His Phe Arg Arg Ser Ala Tyr	435		440		445
Arg Glu Val Ser Leu Gly Asn Gly Gln Thr Ala Asp Ile Ile Thr Phe	450		455		460
Tyr Asn Ser Val Tyr Val Gln Ser Met Gly Asn Tyr Gly Arg His Leu	465		470		475
Glu Cys Ala Gln Thr Arg Lys Ser Leu Glu Glu Ser Gln Ser Ser Val		485		490	495
Gly Ile Leu Thr Glu Asn Asn Phe Gln Arg Ile Glu His Glu Ser Gln		500		505	510
His Gln His Ile Phe Thr Ala Pro Ser Gln Gly Met Pro Lys Trp Leu		515		520	525
Leu Leu Gln Ser Ser Thr Phe Ile Ser Arg Arg Ile Thr Thr Phe Leu		530		535	540
Ala Lys Leu Ala Gln Arg Lys Ala Cys Cys Phe Glu	545		550		555

  

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 <212> PRT  
 <213> Any Insect

<400> 23

Arg Ile Cys Ser Cys Pro Lys Arg Asp	
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<210> 24  
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<400> 24

Lys Ile Cys Ser Cys Pro Lys Arg Asp	
1	5

<210> 25  
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<212> PRT  
<213> Any Insect

<400> 25

Arg Val Cys Ser Cys Pro Lys Arg Asp  
1 5

<210> 26  
<211> 9  
<212> PRT  
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<400> 26

Lys Val Cys Ser Cys Pro Lys Arg Asp  
1 5

<210> 27  
<211> 9  
<212> PRT  
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<400> 27

Arg Ile Cys Thr Cys Pro Lys Arg Asp  
1 5

<210> 28  
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<212> PRT  
<213> Any Insect

<400> 28

Lys Ile Cys Thr Cys Pro Lys Arg Asp  
1 5

<210> 29  
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<212> PRT  
<213> Any Insect

<400> 29

Arg Val Cys Thr Cys Pro Lys Arg Asp  
1 5

<210> 30  
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<212> PRT  
<213> Any Insect

<400> 30

Lys Val Cys Thr Cys Pro Lys Arg Asp  
1 5

<210> 31  
<211> 7  
<212> PRT  
<213> Any Insect

<220>  
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<222> (2)..(2)  
<223> "X" is any amino acid

<400> 31

Phe Xaa Cys Lys Asn Ser Cys  
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<210> 32  
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<212> PRT  
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<220>  
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<223> "X" is any amino acid

<400> 32

Phe Xaa Cys Gln Asn Ser Cys  
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<210> 33  
<211> 393  
<212> PRT  
<213> Homo sapiens

<400> 33

Met Glu Glu Pro Gln Ser Asp Pro Ser Val Glu Pro Pro Leu Ser Gln  
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Glu Thr Phe Ser Asp Leu Trp Lys Leu Leu Pro Glu Asn Asn Val Leu  
20 25 30

Ser	Pro	Leu	Pro	Ser	Gln	Ala	Met	Asp	Asp	Leu	Met	Leu	Ser	Pro	Asp
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Asp	Ile	Glu	Gln	Trp	Phe	Thr	Glu	Asp	Pro	Gly	Pro	Asp	Glu	Ala	Pro
	50					55					60				
Arg	Met	Pro	Glu	Ala	Ala	Pro	Arg	Val	Ala	Pro	Ala	Pro	Ala	Ala	Pro
65					70					75					80
Thr	Pro	Ala	Ala	Pro	Ala	Pro	Ala	Pro	Ser	Trp	Pro	Leu	Ser	Ser	Ser
				85					90					95	
Val	Pro	Ser	Gln	Lys	Thr	Tyr	Gln	Gly	Ser	Tyr	Gly	Phe	Arg	Leu	Gly
			100					105					110		
Phe	Leu	His	Ser	Gly	Thr	Ala	Lys	Ser	Val	Thr	Cys	Thr	Tyr	Ser	Pro
		115					120					125			
Ala	Leu	Asn	Lys	Met	Phe	Cys	Gln	Leu	Ala	Lys	Thr	Cys	Pro	Val	Gln
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Ala	Ile	Tyr	Lys	Gln	Ser	Gln	His	Met	Thr	Glu	Val	Val	Arg	Arg	Cys
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Pro	His	His	Glu	Arg	Cys	Ser	Asp	Ser	Asp	Gly	Leu	Ala	Pro	Pro	Gln
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His	Leu	Ile	Arg	Val	Glu	Gly	Asn	Leu	Arg	Val	Glu	Tyr	Leu	Asp	Asp
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Arg	Asn	Thr	Phe	Arg	His	Ser	Val	Val	Val	Pro	Tyr	Glu	Pro	Pro	Glu
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Val	Gly	Ser	Asp	Cys	Thr	Thr	Ile	His	Tyr	Asn	Tyr	Met	Cys	Asn	Ser
225					230					235					240
Ser	Cys	Met	Gly	Gly	Met	Asn	Arg	Arg	Pro	Ile	Leu	Thr	Ile	Ile	Thr
				245					250					255	



Leu Glu Asp Ser Ser Gly Asn Leu Leu Gly Arg Asn Ser Phe Glu Val  
260 265 270

Arg Val Cys Ala Cys Pro Gly Arg Asp Arg Arg Thr Glu Glu Glu Asn  
275 280 285

Leu Arg Lys Lys Gly Glu Pro His His Glu Leu Pro Pro Gly Ser Thr  
290 295 300

Lys Arg Ala Leu Pro Asn Asn Thr Ser Ser Ser Pro Gln Pro Lys Lys  
305 310 315 320

Lys Pro Leu Asp Gly Glu Tyr Phe Thr Leu Gln Ile Arg Gly Arg Glu  
325 330 335

Arg Phe Glu Met Phe Arg Glu Leu Asn Glu Ala Leu Glu Leu Lys Asp  
340 345 350

Ala Gln Ala Gly Lys Glu Pro Gly Gly Ser Arg Ala His Ser Ser His  
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Leu Lys Ser Lys Lys Gly Gln Ser Thr Ser Arg His Lys Lys Leu Met  
370 375 380

Phe Lys Thr Glu Gly Pro Asp Ser Asp  
385 390

<210> 34  
<211> 363  
<212> PRT  
<213> Xenopus laevis

<400> 34

Met Glu Pro Ser Ser Glu Thr Gly Met Asp Pro Pro Leu Ser Gln Glu  
1 5 10 15

Thr Phe Glu Asp Leu Trp Ser Leu Leu Pro Asp Pro Leu Gln Thr Val  
20 25 30

Thr Cys Arg Leu Asp Asn Leu Ser Glu Phe Pro Asp Tyr Pro Leu Ala  
35 40 45

Ala Asp Met Thr Val Leu Gln Glu Gly Leu Met Gly Asn Ala Val Pro  
50 55 60

Thr	Val	Thr	Ser	Cys	Ala	Val	Pro	Ser	Thr	Asp	Asp	Tyr	Ala	Gly	Lys	65	70	75	80
Tyr	Gly	Leu	Gln	Leu	Asp	Phe	Gln	Gln	Asn	Gly	Thr	Ala	Lys	Ser	Val	85	90	95	
Thr	Cys	Thr	Tyr	Ser	Pro	Glu	Leu	Asn	Lys	Leu	Phe	Cys	Gln	Leu	Ala	100	105	110	
Lys	Thr	Cys	Pro	Leu	Leu	Val	Arg	Val	Glu	Ser	Pro	Pro	Pro	Arg	Gly	115	120	125	
Ser	Ile	Leu	Arg	Ala	Thr	Ala	Val	Tyr	Lys	Lys	Ser	Glu	His	Val	Ala	130	135	140	
Glu	Val	Val	Lys	Arg	Cys	Pro	His	His	Glu	Arg	Ser	Val	Glu	Pro	Gly	145	150	155	160
Glu	Asp	Ala	Ala	Pro	Pro	Ser	His	Leu	Met	Arg	Val	Glu	Gly	Asn	Leu	165	170	175	
Gln	Ala	Tyr	Tyr	Met	Glu	Asp	Val	Asn	Ser	Gly	Arg	His	Ser	Val	Cys	180	185	190	
Val	Pro	Tyr	Glu	Gly	Pro	Gln	Val	Gly	Thr	Glu	Cys	Thr	Thr	Val	Leu	195	200	205	
Tyr	Asn	Tyr	Met	Cys	Asn	Ser	Ser	Cys	Met	Gly	Gly	Met	Asn	Arg	Arg	210	215	220	
Pro	Ile	Leu	Thr	Ile	Ile	Thr	Leu	Glu	Thr	Pro	Gln	Gly	Leu	Leu	Leu	225	230	235	240
Gly	Arg	Arg	Cys	Phe	Glu	Val	Arg	Val	Cys	Ala	Cys	Pro	Gly	Arg	Asp	245	250	255	
Arg	Arg	Thr	Glu	Glu	Asp	Asn	Tyr	Thr	Lys	Lys	Arg	Gly	Leu	Lys	Pro	260	265	270	
Ser	Gly	Lys	Arg	Glu	Leu	Ala	His	Pro	Pro	Ser	Ser	Glu	Pro	Pro	Leu	275	280	285	

Pro Lys Lys Arg Leu Val Val Val Asp Asp Asp Glu Glu Ile Phe Thr  
 290 295 300

Leu Arg Ile Lys Gly Arg Ser Arg Tyr Glu Met Ile Lys Lys Leu Asn  
 305 310 315 320

Asp Ala Leu Glu Leu Gln Glu Ser Leu Asp Gln Gln Lys Val Thr Ile  
 325 330 335

Lys Cys Arg Lys Cys Arg Asp Glu Ile Lys Pro Lys Lys Gly Lys Lys  
 340 345 350

Leu Leu Val Lys Asp Glu Gln Pro Asp Ser Glu  
 355 360

<210> 35  
 <211> 564  
 <212> PRT  
 <213> Loligo forbesi

<400> 35

Met Ser Gln Gly Thr Ser Pro Asn Ser Gln Glu Thr Phe Asn Leu Leu  
 1 5 10 15

Trp Asp Ser Leu Glu Gln Val Thr Ala Asn Glu Tyr Thr Gln Ile His  
 20 25 30

Glu Arg Gly Val Gly Tyr Glu Tyr His Glu Ala Glu Pro Asp Gln Thr  
 35 40 45

Ser Leu Glu Ile Ser Ala Tyr Arg Ile Ala Gln Pro Asp Pro Tyr Gly  
 50 55 60

Arg Ser Glu Ser Tyr Asp Leu Leu Asn Pro Ile Ile Asn Gln Ile Pro  
 65 70 75 80

Ala Pro Met Pro Ile Ala Asp Thr Gln Asn Asn Pro Leu Val Asn His  
 85 90 95

Cys Pro Tyr Glu Asp Met Pro Val Ser Ser Thr Pro Tyr Ser Pro His  
 100 105 110

Asp His Val Gln Ser Pro Gln Pro Ser Val Pro Ser Asn Ile Lys Tyr

115							120						125			
Pro	Gly	Glu	Tyr	Val	Phe	Glu	Met	Ser	Phe	Ala	Gln	Pro	Ser	Lys	Glu	
	130					135					140					
Thr	Lys	Ser	Thr	Thr	Trp	Thr	Tyr	Ser	Glu	Lys	Leu	Asp	Lys	Leu	Tyr	
145					150					155					160	
Val	Arg	Met	Ala	Thr	Thr	Cys	Pro	Val	Arg	Phe	Lys	Thr	Ala	Arg	Pro	
				165					170					175		
Pro	Pro	Ser	Gly	Cys	Gln	Ile	Arg	Ala	Met	Pro	Ile	Tyr	Met	Lys	Pro	
			180					185					190			
Glu	His	Val	Gln	Glu	Val	Val	Lys	Arg	Cys	Pro	Asn	His	Ala	Thr	Ala	
		195					200					205				
Lys	Glu	His	Asn	Glu	Lys	His	Pro	Ala	Pro	Leu	His	Ile	Val	Arg	Cys	
	210					215					220					
Glu	His	Lys	Leu	Ala	Lys	Tyr	His	Glu	Asp	Lys	Tyr	Ser	Gly	Arg	Gln	
225					230					235					240	
Ser	Val	Leu	Ile	Pro	His	Glu	Met	Pro	Gln	Ala	Gly	Ser	Glu	Trp	Val	
				245					250					255		
Val	Asn	Leu	Tyr	Gln	Phe	Met	Cys	Leu	Gly	Ser	Cys	Val	Gly	Gly	Pro	
			260					265					270			
Asn	Arg	Arg	Pro	Ile	Gln	Leu	Val	Phe	Thr	Leu	Glu	Lys	Asp	Asn	Gln	
		275					280					285				
Val	Leu	Gly	Arg	Arg	Ala	Val	Glu	Val	Arg	Ile	Cys	Ala	Cys	Pro	Gly	
	290					295					300					
Arg	Asp	Arg	Lys	Ala	Asp	Glu	Lys	Ala	Ser	Leu	Val	Ser	Lys	Pro	Pro	
305					310					315					320	
Ser	Pro	Lys	Lys	Asn	Gly	Phe	Pro	Gln	Arg	Ser	Leu	Val	Leu	Thr	Asn	
				325					330					335		
Asp	Ile	Thr	Lys	Ile	Thr	Pro	Lys	Lys	Arg	Lys	Ile	Asp	Asp	Glu	Cys	
			340					345					350			

Phe Thr Leu Lys Val Arg Gly Arg Glu Asn Tyr Glu Ile Leu Cys Lys  
 355 360 365

Leu Arg Asp Ile Met Glu Leu Ala Ala Arg Ile Pro Glu Ala Glu Arg  
 370 375 380

Leu Leu Tyr Lys Gln Glu Arg Gln Ala Pro Ile Gly Arg Leu Thr Ser  
 385 390 395 400

Leu Pro Ser Ser Ser Ser Asn Gly Ser Gln Asp Gly Ser Arg Ser Ser  
 405 410 415

Thr Ala Phe Ser Thr Ser Asp Ser Ser Gln Val Asn Ser Ser Gln Asn  
 420 425 430

Asn Thr Gln Met Val Asn Gly Gln Val Pro His Glu Glu Glu Thr Pro  
 435 440 445

Val Thr Lys Cys Glu Pro Thr Glu Asn Thr Ile Ala Gln Trp Leu Thr  
 450 455 460

Lys Leu Gly Leu Gln Ala Tyr Ile Asp Asn Phe Gln Gln Lys Gly Leu  
 465 470 475 480

His Asn Met Phe Gln Leu Asp Glu Phe Thr Leu Glu Asp Leu Gln Ser  
 485 490 495

Met Arg Ile Gly Thr Gly His Arg Asn Lys Ile Trp Lys Ser Leu Leu  
 500 505 510

Asp Tyr Arg Arg Leu Leu Ser Ser Gly Thr Glu Ser Gln Ala Leu Gln  
 515 520 525

His Ala Ala Ser Asn Ala Ser Thr Leu Ser Val Gly Ser Gln Asn Ser  
 530 535 540

Tyr Cys Pro Gly Phe Tyr Glu Val Thr Arg Tyr Thr Tyr Lys His Thr  
 545 550 555 560

Ile Ser Tyr Leu